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☆ THIS MONTH ☆

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

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RESPONSIVE FIELD.—In 1947 Joe and Fred Tuttle, in the White River Soil Conservation District, obtained a complete conservation plan for their hill farm, near Tunbridge, Vt. They went to work at once on a 14-acre field, within a stone's throw of their barn, and started to convert it to hay land. The field was moist to wet, was full of large stones, stumps, hummocks, and holes, and in some areas there was considerable poplar, spruce, and hemlock pulpwood. It was poor pasture.

From sale of pulpwood they received $350. When the clearing was completed in 1948, a section of brook running through the field

(Continued on page 278)

FRONT COVER.—W. R. Wilson supplied this aerial photograph of conservation farms in the Winneshiek County (Iowa) Soil Conservation District. In this area there are about 120 connecting farm plans, with only about a dozen farms short of making it a solid block. Nearly 100 of these farms belong to the congregation of this church. Parish property nearby is operated by the pastor and his sons. The Reverend Oscar E. Engebretson is one of the spearheads of the conservation drive in Iowa.

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GRASSLAND FARMING IN ARKANSAS

By EDGAR A. HODSON

AFTER fighting grass for generations, Arkansas farmers are now growing it. They have found that grass is the most efficient erosion-control and water-conserving tool they can use. They also have found that grass is a profitable cash crop when the grower has good livestock to harvest it.

When a farmer in the upland sections of the State puts all of his land to the use for which it is best adapted, he is doing grassland farming. Good land use and grassland farming must go together to get the greatest returns, to build up productivity, and to control erosion.

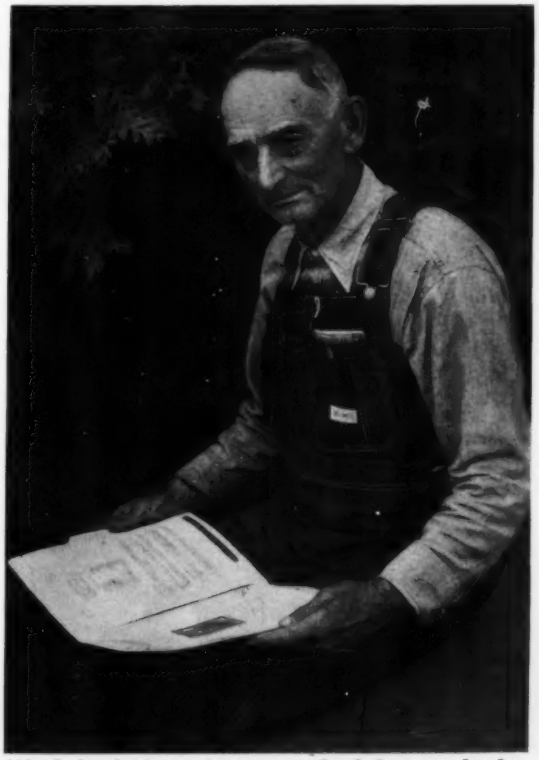
Grassland farming must be planned to fit the land and the needs of the farmer. Adapted grasses and legumes will grow on a wide variety of soil types and in combinations to produce year-round forage. A year-round forage program means feed at minimum cost and a guarantee of greater net profits to the farmer.

The year-round forage program includes separate permanent pastures for summer and winter grazing, plus separate crops for supplementary seasonal grazing and a reserve supply of hay or silage.

A visit to the farm of Alfred Austin, in the Benton County Soil Conservation District, is sufficient to convince anyone that a balanced pasture program with good livestock will pay good dividends.

Austin stopped growing row crops 15 years ago to produce only pasture and forage crops. He built up a high-producing dairy herd and a flock of 100 Hampshire ewes. The sheep have been able to get all of their roughage from pasture. The dairy cattle were fed hay only during the period from the middle of December until about the first of March. Austin is a pioneer grassland farmer. He has found that growing grass is profitable.

The all-year pasture program on the farm of the Arkansas State College at Jonesboro, in the Central Crowley Ridge Soil Conservation District, is another good illustration of proper land use. Part of the permanent summer pasture is Bermuda-grass and lespedeza. Another part is Dallisgrass with white clover. The Bermuda-grass pasture is on land where erosion is a problem. The Dallisgrass is on the more fertile land and is better supplied with moisture. For supplementary summer pasture, sweet Sudangrass is planted on the good cropland. For drought insurance another summer supplement is provided by sericea lespedeaz which will also furnish a crop of hay in the early summer. To extend the drought insurance further into the fall, kudzu is being added.



Alfred Austin is a pioneer grassland farmer who has found that good pasture is the most profitable crop he can grow.

Note.—The author is agronomist, Soil Conservation Service, Little Rock, Ark.

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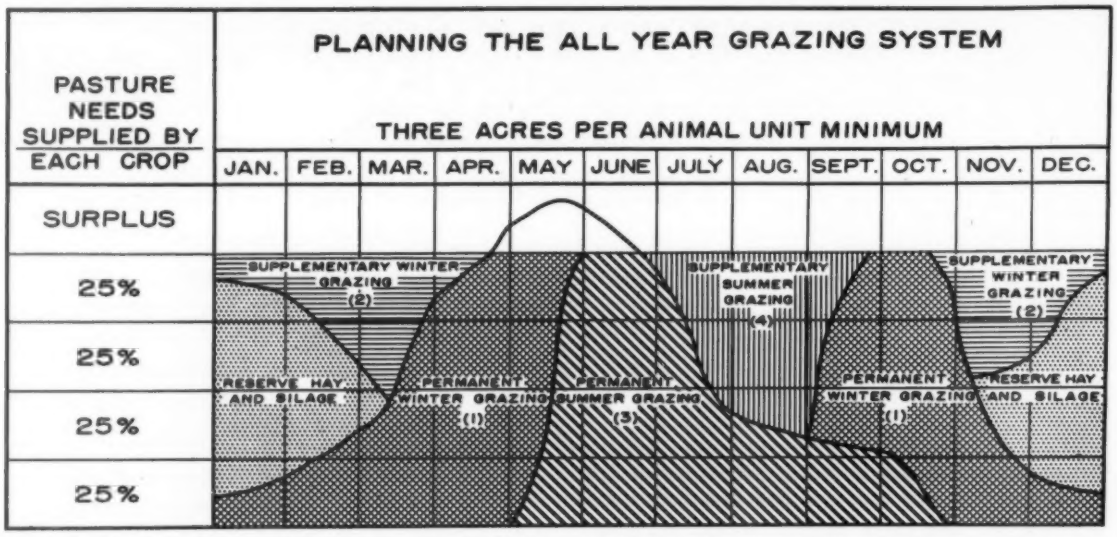
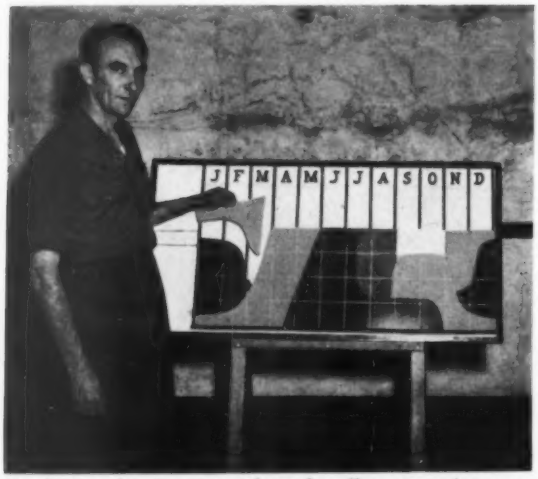


Typical plan for Arkansas dairy farmer. It should be noted that no 2 years will supply the same volume of seasonal grazing. A reserve supply of hay and silage should be included to insure against severe winter weather. The acreage required for each crop will vary with the productivity of the soil. The grazing plan for beef cattle would require variations from this plan to fit the needs; for example, less supplementary pasture would be necessary. Suggested crops: (1) Fescue or orchardgrass with white or Ladino clover; (2) ryegrass or small grains with winter annual legumes; (3) Bermuda-grass and annual lespedeza or Dallisgrass and white clover; (4) sweet Sudan, sericea lespedeza or kudzu.

The sericea is on land not suited for clean-tilled crops, and the kudzu will be planted on land rough and badly gullied. Fescue with Ladino clover has been established for permanent pasture for winter and cool-season grazing. It may be grazed when the ground is wet. It is planted on the more fertile land and where drainage is a problem. Supplementary cool-season grazing is produced on the good cropland from oats or ryegrass with crimson clover to be used when the ground is dry.



Jim Irving showing group how the all-year grazing program works out. He uses a jigsaw chart to illustrate the period of use for each pasture crop in the plan.

The hay that is needed comes mainly from surplus pasture. It is planned later on to use the surplus pasture for silage instead of growing sorghum for silage, as at present.

The plan calls for an adapted pasture or forage crop on every acre of the farm.

The all-year grazing program is gaining momentum. Good examples of progress may be seen in all soil conservation districts in the hill sections of the State. In the Poteau River (Scott County) and Rich Mountain (Polk County) Soil Conservation Districts many farmers are growing grass as their most profitable crop. The cooperators in the Rich Mountain Soil Conservation District expect to plant more than 40,000 pounds of sericea lespedeza seed in 1951. The acreage being seeded to Dallisgrass and fescue is also being greatly expanded.

At Morrilton, in the Central Valleys Soil Conservation District, the chamber of commerce, along with other local organizations and agricultural agencies, is helping farmers to develop sound pasture programs. The chamber is making loans to farmers to purchase seed and fertilizer. Albert Steffens, co-owner of a cheese plant at Morrilton, bought a farm and is establishing an all-year pas-

ture program to show other farmers what can be done. From milk-delivery records he can show his customers how well a sound pasture program pays off.

Summer pasture only: Bill Bridgeman has a herd of 40 milk cows. He milked an average of 22 cows throughout 1950. He has 300 acres of fairly good pasture, Bermuda-grass and lespedeza. His cows produced a total of 55,629 pounds of milk last year, an average of 152 pounds per day from 22 cows or 7 pounds per cow per day.

Summer pasture plus supplementary winter pasture: Frank Rohlman planted oats in the fall of 1949 for winter grazing. His summer pasture was mainly Bermuda-grass with lespedeza. In the fall of 1950 he planted crimson clover with oats and ryegrass. Rohlman milked an average of 12 cows for the year. His total milk production was 56,651 pounds, an average of 155 pounds per day or 13 pounds per cow per day.

All-year pasture: Albert Steffens with a complete pasture program with permanent winter and summer pastures, plus supplementary seasonal pastures, produced 94,542 pounds of milk, an average of 17 pounds per cow per day.

Ernest Trafford sold $73 worth of milk in December of 1949. His feed bill was $50. In the fall of 1950 he planted 6 acres of crimson clover to oats, and 6 acres to fescue and white clover. The same five cows produced $104 worth of milk in December of 1950. The feed bill was $12. A saving of $38 on feed and an increase of $31 for milk— a net gain of $69 for 1 month!

When a farmer develops a coordinated conservation plan on his farm, he puts each acre to the use for which it is best fitted. He supplies to each field the conservation treatment needed to control erosion and to give him profitable, continuous production. When that has been done in areas where erosion has been troublesome the result is a grassland farmer.

TRAILING RASPBERRY—ANOTHER OF THOSE VERSATILE PLANTS

By FRED P. ESHBAUGH

"TRAILING raspberries? I like them very much. They do a variety of things, from keeping woodchucks out of the garden to controlling erosion and providing lots of fruit for the family."

Thus, Adolph Habrich, who lives near Pawnee City, Nebr., in the Turkey Creek Soil Conservation District, describes this plant which is relatively new in the United States but is showing promise for erosion control on tough sites in certain areas.

And the site for the Habrich planting of trailing raspberries was tough—a barren east bank of a natural drainage below his farm pond, with soil known locally as "buckshot gumbo," in full sun most of the day and exposed to intense afternoon heat in summer.

The 100 plants he got from the Soil Conservation Service in the spring of 1938 seemed so puny, Habrich relates, that he didn't have the heart to put them out on their own. Instead, he put them in his garden where in a single season they doubled in number by producing new plants at the tips. The following spring he planted them on that barren bank.

Today the plants cover a quarter of an acre and would have spread more if it hadn't been necessary to control them to prevent their encroaching on the garden space. The fruit they produce, Habrich reports, is so good that it is a "special occasion" dish with his family.

Habrich's experience, and the experience of others, gives some idea of the usefulness of trailing raspberries. Apparently they are cosmopolitan so far as soils and site locations are concerned, but have not proved adapted, in Nebraska and Kansas at least, in areas where there is less than 24 inches of annual precipitation. They have grown well on poor Dakota sandstone soils in Lancaster and Saunders Counties, Nebr., and on deep loess soils in Brown County, Kans.

Note.—The author is nursery manager, Soil Conservation Service, Manhattan, Kans.

At the Soil Conservation Service nursery at Manhattan, Kans., the trailing raspberries have grown vigorously in deep sandy soils, and in a gully planting of note—on the Dubach Brothers farm near Blair, Kans., cooperating with the Doniphan Soil Conservation District—the raspberries are rooted in deep Knox loess.

This land is steeply rolling and subject to severe erosion but is considered one of the better orchard soils in Kansas. One hundred trailing raspberry plants were set out in 1942 in an active gully on the Dubach farm along with several hundred black locust and catalpa seedlings.

No attention was given to this planting, but the plants thrived and spread in nearly full shade beneath the locust and catalpa trees. They also have crept out into the open along the gully banks and are moving up the gully.

Although the gully is still active above where the planting was made, it has been checked effectively in the planted area.

"The development of this planting is surprising," according to Wilber Copenhafer of the Soil Conservation Service at Troy, Kans. "It shows that sometimes a little patience is needed. At first there wasn't much evidence of the raspberries, but they came through in good style."

One of the wildlife-area plantings was made in 1942 by J. C. McGill, a cooperator with the Lancaster Soil Conservation District, at his farm near Waverly, Nebr. Two hundred trailing raspberry plants were set as an outside border on the south and west of a wildlife area that is fenced out of a brome-grass pasture. This is also a tough site, since the farm has a Dakota sandstone outcrop, and the fenced area has a mixture of hardwoods, shrubs, and conifers.

The trailing raspberry plants have spread into a belt about 30 feet wide around the wildlife area and are moving inside it among hackberry, buffaloberry, sandcherry, buckthorn, ash, mulberry, and cedar. Nor have the raspberry plants shown any inclination to retreat before brome grass.

Here, too, the fruit produced by the trailing raspberries is popular in the neighborhood. Mrs. McGill said that if the family should move, some trailing raspberry plants would be taken along.

A native of Japan, trailing raspberry was first introduced into the United States in 1929 by P. H. Dorsett and J. W. Morse, explorers of the division of plant exploration and introduction of the Bureau of Plant Industry. It is a true trailing red raspberry, correctly identified as *Rubus parvifolius*, or crimson-flowered trailing raspberry. The fruit is attractive in color, size, and flavor. There is little or no bloom on the fruit, which closely resembles that of a dewberry (trailing blackberry) in the darker-fruited strains.

Soon after its introduction in testing stations in Maryland and North Carolina, plants were distributed to nurseries in many localities for observation and testing. It was hoped by recipients of the early allocations that they had at last been freed of the worry and care of producing an acceptable raspberry for general use outside the recognized

Mrs. J. C. McGill picking some of the fruit on the McGill farm in the Lancaster County Soil Conservation District. Two hundred plants obtained through the Soil Conservation Service were planted as an outside border on the south and west sides of a wildlife area in 1942.

Propagation of trailing raspberry plants is carried on at the Soil Conservation Service nursery at Manhattan, Kans. Plants obtained from Willard, N. C., have been used as foundation stock. Here is seen part of the half-acre block at the nursery.

commercial berry-growing districts.

There were several qualities on which to base these hopes. The plant is hardy, shade- and sun-tolerant, vigorous, free from disease, and it will grow in a wide range of soils and under variable rainfall and temperature conditions. It roots from the tips of canes. Under undisturbed field conditions, it spreads rapidly and forms a dense cover for protection of soil and wildlife.

Two employees of the Soil Conservation Service, L. E. Smedley at Pawnee City and D. E. Hutchinson of Lincoln, pioneered in planting trailing raspberry for soil conservation in this region. Miss Eva M. McMillen, home economist at Kansas State College, conducted tests on the quality of the fruit. She made pie, tarts, jam, jelly, and juice and also served fresh fruit. These all got a high rating from a testing committee in the home-economics department.

Experiences with trailing raspberry supply no indication that it can equal grasses and kudzu as a soil cover, but it certainly has special uses in localities where it is adapted. Nor are large plantings needed to supply fruit for a family. A small area of wasteland, a gully in a pasture, a nook near the farmstead, part of the area around a fenced pond, a border along a windbreak, will do.

Spacing of plants can be varied to fit the planter's equipment, especially if the planting is to be cultivated for a year or more. In general, a 6-by-6-foot spacing of the plants will produce a good cover in 2 or 3 years. But an even wider spacing may be used, since the canes, which may be somewhat branched, often extend 6 to 8 feet from the crown.

Some observers have reported poor fruit production from trailing raspberry plants. This may be due to a combination of factors, such as heredity, late freezes, poor pollination conditions, dry weather, or low plant vigor. To avoid hereditary causes, it is best to use only plants grown from the seed from proved sources. Plants from Willard, N. C., were used for the foundation stock at the Soil Conservation Service nursery at Manhattan, Kans., from which have come the plants distributed to soil conservation districts in the Northern Great Plains. No shy bearing due to heredity has been experienced with them.

A few general statements, by way of summary:

1. Trailing raspberry is not too particular about soil fertility and will grow on a wide range of soils east of the 24-inch rainfall line.

2. Initial plantings require some form of cultivation for at least 2 years in order to compete with other vegetation.

3. The plant is moderately shade-tolerant and will grow underneath and along the edges of tree and shrub rows.

4. Established plantings provide excellent ground cover and are especially useful in wildlife areas in providing nesting and feeding places for birds and small game.

5. The fruit is of acceptable quality and is suitable for making pie, jelly, jam, tarts, and fresh dessert.

6. The plant is quite resistant to bramble diseases and is not greatly damaged by insects and rodents.

7. New plants may be obtained from seed or from cane tips covered with soil in midsummer.

8. Old plantings, if renovated, may regain vigor and fruit production. Renovation is accomplished by cutting out old canes, thinning plants, applying fertilizer if needed, and frequent tillage after plowing between rows, up to the time canes start rooting.

It is entirely possible that natural segregation or local adaptation may occur over a period of years to add strains that may have wider adaptability than the present strains. This would be desirable, since the performance of trailing raspberry indicates that it could well be used to a greater extent.

WATER WEALTH LOST BY SILT POLLUTION

By CURTIS L. NEWCOMBE

WATER covers but a relatively small fraction of the land surface of the North American continent—according to Paul Welch, about 2 percent. Yet, it exerts a tremendous influence for good or for bad on the land and on the future well-being of its people.

In this article, I set down some impressions of its paradoxical, man-induced influence for bad. I refer to the role of water in scouring misused lands, in transporting valuable loads of soil to the sea where recovery is minimal, and simultaneously decimating many valuable plant and animal communities which live in brooks, streams, creeks, rivers, harbors, bays, and coastal areas.

Lest we brush aside too lightly the extent of land erosion, recall for a moment the oft-quoted estimate that only one-third of the earth's surface is above sea level and that its mean elevation is less than one-half mile. Day by day these figures shrink. Why? Because about 3 billion metric tons of material from the land are being washed into the sea annually. Sir Cyril Fox ventures that if the ratio of erosion now taking place in the Mississippi River watershed were maintained world-wide the land surface of the globe would be lowered to sea level in about 60 million years.

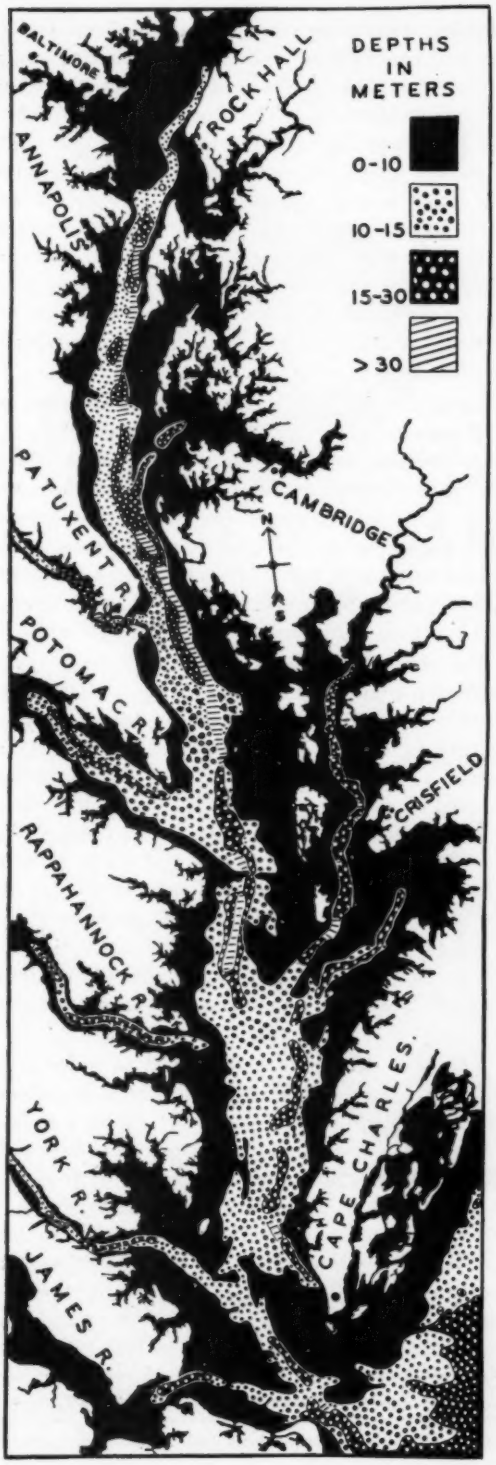
Easier to visualize is the oft-quoted saying, and doubtless all too true, that the topsoil of one 40-acre farm goes down the Mississippi River past a given point every minute of the day and night. Of concern to the farmer is the estimate by the Kentucky agriculturists, McHargue and Peter, that the Mississippi removes annually from the land over 62 thousand tons of soluble phosphorus, in addition to around 7,500 million cubic feet of suspended matter that contains 0.15 percent phosphorus in combined form. These are staggering losses of our heritage that can not and should not be ignored. In the future every effort must be bent to understand and correct the causes of these wastes if we are to continue living well. William Feather has said, "About one-half the world's work is repairing mistakes." America has made its share of mistakes. To compensate for them is the big job ahead.

The waste of rich topsoil and valuable nutrients needed by the land is indeed great. But it is felt by others than the farmer. The arteries of silt transport are the brooks, streams, creeks, and rivers upon which millions of sport fishermen depend for recreation. Erosion silt can ruin the productivity of a trout stream by removing fish food or it can destroy spawning grounds of salmon by submerging the gravel beds. Thus, the commercial as well as the sports fisherman has a stake in clean water. Over 15 million sport fishermen use the waters of this Nation every year. If we assume their individual expenditures for this type of recreation to be $60, we have an annual total of almost a billion dollars. In California alone, with a population of a little over 10 million, there were in 1949 about a million licensed anglers whose annual expenditures for fishing probably totaled over 60 million dollars.

At a time when industries are polluting our streams, rivers, bays, and harbors, when the recreational facilities of our rapidly expanding population are inadequate and overcrowded, we are apt to overlook silt as it makes insidious inroads on the productivity of our rivers and streams, lakes and reservoirs—nature's hubs around which revolve the recreational activities of millions of Americans. *It is time to wake up to the facts about mistreated water.*

Silt, as a destroyer of the animal environment and hence of animal populations, first caught my attention in the Bay of Fundy off the Gulf of Maine. There the zone between the high- and low-tide marks is exceedingly great. It may be as little as 50 feet or as great as 1 mile or more, depending on the slope of the shore. The tidal amplitude, one of the greatest in the world, ranges from about 25 feet to over 50 feet. Everything, living as well as dead matter, appears to be stratified or zoned, and that goes for grades of stones, gravel, sand, and mud. Horizontal bands of plants and animals line the picturesque, rugged, and colorful shoreline for

Note.—The author is biologist of the California and Great Basin Drainage Basins Office in the United States Public Health Service, San Francisco 2, Calif.



miles. The black layer of sea mussels adjoins the glistening white specks of acorn barnacles that pepper every exposed, but hard, surface. Lower down, where the proportions of mud and sand are about equal, appears to be the optimum habitat for the subsurface, soft-shell clam. The clam connects with the surface by means of a retractile, muscular neck with incurrent and excurrent canals for drawing in and expelling food-bearing waters. Still lower down in quiet coves the clam was singularly absent although elsewhere abundant and growing normally. An analysis of the environmental factors showed the *limiting factor* to be a surface layer of silt sufficient to smother an entire adult population of these bivalves. The silt had washed in from the land and developed a delta fan of encroachment upon an otherwise balanced community of clams, soil, and water. Particles of silt had smothered the clams, stifled their breathing tissues and choked off circulation, spelling death to a subterranean population of nutritious marine animals that have made New England clambakes famous.

Silt may limit the distribution and abundance of a population in devious ways. The surface-dwelling Virginia oyster of Chesapeake Bay affords another example. There, free-floating larval oysters of microscopic size develop to a settling-down stage when they are ready to attach to a clean, hard surface. This is the weak link in the chain of successful oyster culture. Without clean, hard surfaces such as oyster shells the larvae soon die. The attachment materials are known as "culch." In colonial times the waters of the Chesapeake were relatively clear, as testified by the early writings. Great oyster bars extended up and down the bay and formed numerous elevations above the bottom that, in the James River, appeared at low tide as small islands above the surface. Oldsters in the oyster industry today still remember some of them. But why have they seemingly sunk? It is not alone because of the silt factor.

Here, and in numerous other parts of the bay, the story is the same: Overfishing on the bars (i.e., a faster removal than can be compensated for by nature), depletion, disuse of the bars, and, then, the accumulation of a silt load even too great to overcome economically by artificial planting of culch or by other modern cultural operations.

Chesapeake Bay's large shallow areas in black bespeak the volume of "sullage from the plough."

Fouling of the needed attachment surfaces by silt has gone too far. Thus, there is terminated the life of an oyster bar (or "rock" as they are known locally) built up slowly through long periods of geologic time.

One asks, *Has the amount of silt in Chesapeake waters increased since Colonial times and, if so, why?* There is evidence that soil erosion assumed startling proportions at an early date. Tatham wrote about the silting up of rivers in his *Essay on Tobacco,* dated 1800: ". . . the constant sullage from the plough, and other washings of the upland counties, have impeded the navigation, . . . but particularly James' River, where the channel is subject of frequent changes."

L. C. Gottschalk has accumulated convincing evidence to show a conspicuous increase, especially within recent decades. He estimates that over 85 million cubic yards of sediment were deposited at the head of the bay alone between 1846 and 1938. Foundations of Colonial towns laid out adjacent to deep water for purposes of water transport are now as far inland as 1 or 2 miles. The cause lies in the familiar story of misuse of the land—in this case, rapid deforestation of the coastal plain by the tobacco planters of the Colonial period. They started the march of soil to Chesapeake Bay and as yet it has not been stopped.

Let us leave the Atlantic coast with its washed-out, defertilized tobacco lands to explore the ways of silt and of men on the western fringe of the North American continent. Turn to the expansive State of California and inland to the once-beautiful streams of the Central Valley that drain the western slopes of the Sierra Nevada Mountains. There was a time when stream banks, protected by deeply rooted plants and fringed with emergent vegetation and healthy shade in a tempting habitat niche, were in balance. The waters were clear and crystalline. What do we find today? Great gravel piles may offer the most conspicuous greeting. In parts strangely barren, they have remained thus for decades, so successful has been the defacement of nature's alpine beauty and the wholesale gouging of her stream beds. *It took but the business of a few to destroy the priceless heritage of a nation.*

These were also pioneer days. Gold meant to California what tobacco meant to Virginia. Brigades of miners swarmed to the rivers, and the eruption, destruction, and migration of soil began. One will probably never truly know the immensity of the catastrophe spelled out during that reckless and improvident era. The erosion silt has reached San Francisco Bay; in what quantity no one rightly knows. The bathymetric picture accompanying this article is strongly suggestive. *Over 40 percent of the bay area lies under less than 5 feet of water.* Here the oyster is but a memory. No one will dispute the destructive role played by silt, along with domestic and industrial wastes, in cutting down the capacity of the bay waters to produce nutritious shellfish, as well as fin fish.

Elsewhere in California the transformations of landscape may be less dramatic but all bear the scars of human greed and wanton profligacy. Early settlers in the Salinas Valley described the San Antonio River bed as being narrow and well-defined, with bordering groups of cottonwood trees when foliage sometimes met above the streams. By 1905 the watercourses were broad flats of sand, gravel, and boulders, often a quarter of a mile in width.

But the biological implications of such transfiguration of habitat are not always visible at the surface. Erosion silt may attack fish directly by destroying the spawning beds, as in the case of salmon. These beds consist of a gravel bottom covered by shallow, clear, cool, flowing water. Such beds were common in the rivers of the Central Valley. They were the destination of great up-river runs of Chinooks. Biologists now strive for the protection of the remaining beds that have survived the passage of time with the multiplicity of dams, irrigation facilities, hydraulic mining dredges, and other transformers of nature spawned by man.

The basic element of productivity in water is the plankton—microscopic plants and animals—at one end of the food chain. *When silt enters a stream, look for a rapid exit of plankton.* Silt draws the curtain against light, and the growth of free-floating, microscopic plants declines. Those living on the stones and rock surfaces in the stream beds likewise succumb to the shades of night imposed by an invading blanket of silt. Thus, the all-important link in the food chain is severed. Bottom-dwelling, immature stages of insects such as May-flies, stone-flies, caddice-flies, and crane flies decrease in numbers. In short, fish food suffers and is reflected in

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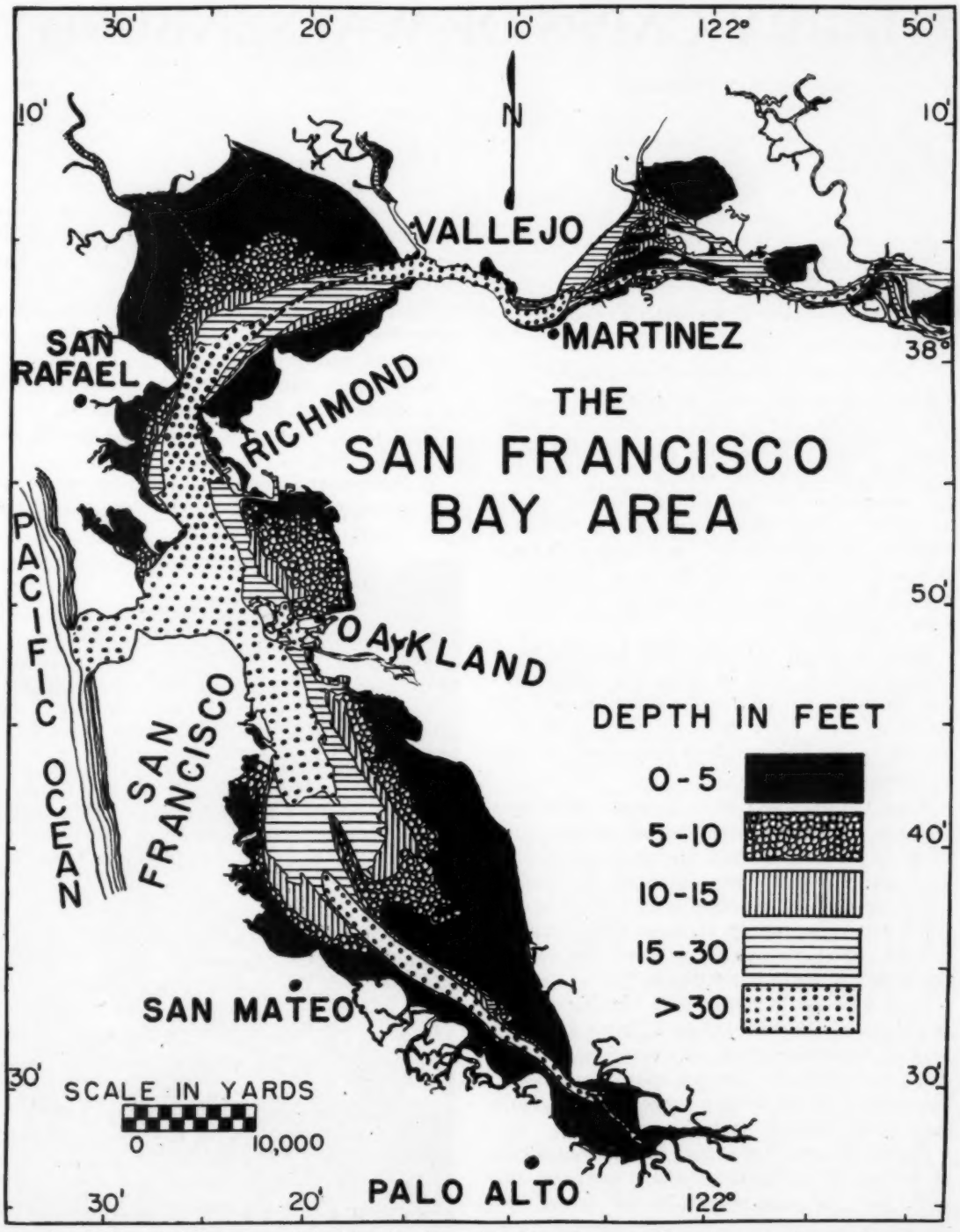


Extensive shallow, silt-laden areas of San Francisco Bay tell a dramatic story of man's waste of natural resources.

HARRY CAPPS OF WALSENBURG

By MILTON MANGUM

DROUGHT in the short-grass country anywhere from the Rio Grande to the Canadian border means more mail for Harry Capps. Wearied cowmen in far places know that if there's grass anywhere it will be on the Capps place. And so the pathetic appeals pour in on "the Old Man of the Mountain" at his grassy retreat in the wilderness overlooking the town of Walsenburg, Colo.

"If I could just squeeze in a few carloads . . ."

"I'm desperate. My grass and water's gone . . ."

Many cowmen drive in, with dust-caked fenders and vivid pictures of distressed conditions on their ranges. They try bargaining, pleading, and other means of persuasion. But neither love, nor money, nor cuss words—nor that strongest appeal of all, the desire to help another cowman in distress—would ever persuade Harry Capps to open his gates to another "critter" when his range is stocked; stocked, that is, with a wide margin in favor of grass and browse.

His is a shared life. If it will help the home folks he's for it. And by being for it he means more than an affirmative nod. When Capps is for something, he's for it with all the punch of a trained fighter, but a trained fighter with a sense of humor.

When the fight was on at a recent cattlemen's convention to determine whether the next meeting would be held at Colorado Springs or at Walsenburg, Capps was in there doing all he could to swing the votes to his home town. When he was asked about the supply of beds, Capps replied, "Beds? Who's worried about beds? The convention's only going to last 4 nights."

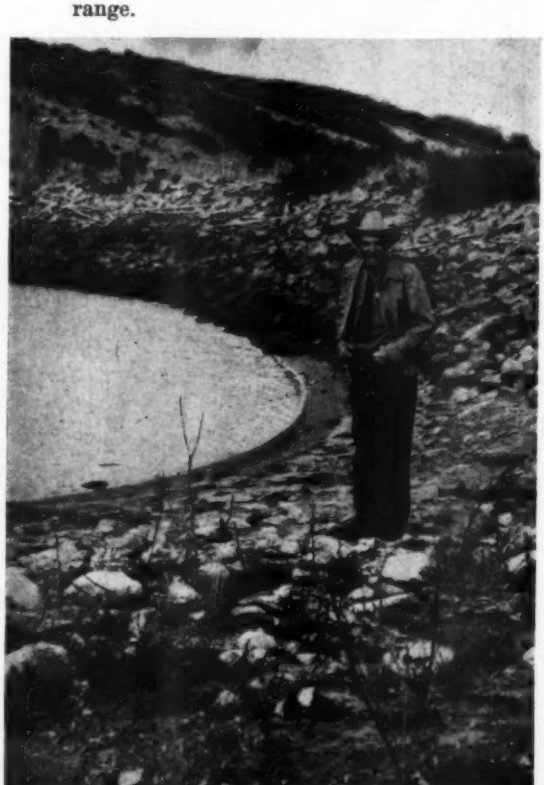
Catching a cattle rustler gave him his start in ranching. His $300 reward paid for his first eight head of foundation stock. His tenacious belief in grass, backed up by constant effort to do better, has enabled him to develop range land that harks back to the days of Coronado.

The 42,000-acre Capps ranch sprawls contentedly at the foot of the Spanish Peaks in southern Colorado. Here, fat grass spreads its lush carpet from way up on the bench where tall ponderosas gather in congenial groups on down to the breaks where the scrub oak begins to peter out.

Like a giant piece from a jigsaw puzzle, the Capps ranch stands out in bold contrast to its surroundings. Here is range land better than before the white man came. Here lives again the sea of waving grass pictured in the diaries of those who traveled westward a hundred years ago.

The grass on Harry Capps' ranch is better because he has followed four basic principles of range-land management:

1. Livestock numbers are kept well within the limits of the feed the range provides.
2. Grazing is adjusted to meet the growth requirements of the grass.
3. Stockwater facilities, salt, and fences are located where they make the best use of the range.



Harry J. Capps at the edge of one of his stockwater dams.

Note.—The author is in the Production and Marketing Administration, Washington, D. C.

Healed gully on the Harry J. Capps ranch.

4. His stock is the kind that makes the most economical use of the grass available.

Capps really believes in grass. To him its tender blades in spring and summer or its golden stalks in fall and winter are the panacea for whatever may ail a man—his livestock or his land. His is no "hokus-pokus," "mumbo-jumbo" faith in mystical curative properties, but the hard-bitten experience of a lifetime.

He has learned that to have enough grass in the lean years you can't graze it down to root-tops in the long years. He has seen many a stockman go under because he had more cattle than feed; few, if any, because they had too much feed.

He follows a simple rule in buying and selling livestock: "Buy when the other fellow wants to sell. Sell when the other fellow wants to buy."

All too often the reason the "other fellow" wants to sell is shortage of feed. Capps makes sure there is enough. He keeps his livestock numbers within that limit.

To Harry Capps, conservation is simply using his range so that he and those who come after him can go on using it with no reduction in the amount of feed. If all the libraries on conservation were destroyed, the simple essentials of soil building would survive on the Capps ranch. The gullies which once bled the life from this land have healed over. The soil is growing fat on the grass which goes back to it each year. Even the rain seems to fall more abundantly and more frequently on this place.

Truckers, driving through the Capps ranch on the way to a construction job up toward the Spanish Peaks, often complain of the mud in the road through the ranch. Just outside the fence the road is dry and hard.

Although it may seem that he is able to "fence in" the rain, Capps knows that a good sod holds the moisture. The grass blades break the fall of the raindrops and slow down the runoff. The spongy network of roots and decaying plants soaks up the water and holds it in the soil for future needs.

Capps has learned all this, and more, from observing what was going on around him. He has found that a good range cannot be maintained when the grass is eaten to the ground. A part of the grass has to be returned to the soil each year to keep up the organic matter and the fertility. In the blades of grass the food is made to sustain the plant. If the blades are eaten off too early in the spring or too short in the summer, there is little reserve food stored in the roots and the plants are easily killed. Plenty of water backed up by earthen dams helps him get the full use of his range.

He found out, too, what was killing his cattle in the spring when they moved to the higher benchland. The cattle died after a frost. They died where the oak leaves had been frosted. It was simply a matter of keeping the cattle off the oak leaves after a frost, turning them on again when the danger period had passed. He had no more losses from oak poisoning.

One significant departure from established order challenges visitors who like to lose themselves on the Capps acreage. His oak brush has never spread. It stays put, in timid, elegant clusters. On other ranges, the oak spreads as the grass weakens. Here the grass holds its own. And in spite of their poisonous propensities, Capps prizes the shrubs. They provide good forage, they catch the snow, they furnish shade, and besides all that they "just plain look good."

Here and there, star-scattered over this immense block of land, patches of three awn grasses mark the spots where hopeful settlers of another day tried to make a stand for advancing civilization with eastern cropping plans. Slowly these scars are being erased.

When offered nearly half a million for the ranch, Capps' reply was typical: "I know what I can do with the ranch, but I wouldn't know what to do with that much money. Besides, I can have more fun with the ranch."

At one time he had almost decided to sell another piece of range land, but he turned down the offer when he learned the prospective buyer intended to plow up the land and put it into wheat. "I've seen too much land ruined that way and I've smelled too much dust."

But he has bought land to protect it—to keep it from being cut up by gullies and denuded of grass.

Capps has been chairman of the Huerfano County PMA committee for the past 10 or 12 years. He has served on the SCS board for a similar number of years. Although he has been carrying out most of the conservation practices needed on his place for years, he realizes that Nation-wide such programs as are encouraged under the Soil Conservation Service and the Agricultural Conservation Program are necessary to get the job done.

When his neighbors elect him year after year he accepts their confidence in his two-fisted way of carrying on the fight to save and build the land.

Back a few years ago, when prairie dogs were a serious menace to good range, Capps and the committeemen worked out a program requiring ranchers to get rid of them before they were eligible for assistance for any other conservation practice. There was no need trying to help a rancher improve his range with the prairie dogs wiping out all the benefits of seeding or better grazing. Today, they are gone.

The old home once served as post office, ranch headquarters, and social center—a good place to bring up eight children. Here couples came from miles around to dance to the music of fiddle and guitar.

It was to the local post office—known first as Scissors, then Santa Clara, and finally Capps—that young Harry carried mail from Walsenburg for $1.50 a trip. And the trips had to be made, rain or snow.

The old home ranch of his father is a part of the present Harry J. Capps ranch. He's proud of that. But he's prouder that his son Samuel will be getting a ranch with grass as good as it ever was—probably better.

RESPONSIVE FIELD

(Continued from page 266)

was straightened and its banks were protected with riprap. A short piece of road and a bridge were built to give access to the field, which was seeded to reed canarygrass, alsike, and redtop in 1949. Cost of clearing, seeding, liming, and fertilizing was $2,000, a net cost of $1,650 or $118 per acre, after deduction of pulpwood proceeds.

In June 1950 the first cutting from the field was about 140 tons of ensilage, the equivalent of 3 tons of hay per acre. A second cutting yielded another ton per acre, a total of 4 tons of hay equivalent per acre. At $30 per ton this first year production was valued at $1,680, more than the net cost of the whole job.

WATER WEALTH LOST

(Continued from page 274)

the angler's catch. A few bloodworms may exist in organic mud deposits, but generally silt spells decline to a sport fishery.

Erosion silt is an expensive neighbor. It affects deleteriously the use of water for domestic and industrial purposes, for commercial and sport fishing, for recreation, for esthetic improvement of the landscape; in fact, silt affects deleteriously all desirable water uses. By continuing to tolerate the conditions that feed it to our waters we are continuously decreasing our capital stock in land resources, not too great by any standard. That which is really fantastic is our by-passing and ignoring its influence on inland water resources that at best can only absorb unavoidable pollutants from a highly industrialized community of mechanized human beings. We are spending and idly watching our endowment dwindle—soon to arrive at a "hard times" economy. It is later than you think.

KUDZU-23—
A NEW FINE-TEXTURED VARIETY

By R. L. DAVIS and W. C. YOUNG

MANY people think that all kudzu plants are alike, but there are probably as many different varieties of kudzu as there are varieties of corn. They are not known because nobody has taken the trouble to separate them. Kudzu plants differ as to shape of leaf, size of stem, number of leaves, number of stems, length of joints, ability of the joints to root, and in other ways. Since all the crowns grown from one plant will make an identical type of growth, it is easy to have a new variety.

Such a new variety of kudzu is being distributed by the nursery division of the Soil Conservation Service in Region 2. It is called kudzu-23. It was developed by propagating from a single drought-resistant plant found on an eroded clay hillside near Watkinsville, Ga. Since the original crowns came from one mother plant, all the growth in a field of kudzu-23 has the same characteristics. These are a fine-textured foliage with numerous small stems and small, almost-round leaflets. On the other hand, a field of common kudzu has coarse-textured foliage. Such a field is a mixture of many plants, with large and small leaves, but most of them with large and deeply scalloped leaves and coarse stems.

Leaves of common kudzu.

Kudzu-23 represents an improvement in quality rather than forage yields. Stock will not eat the coarse stems of common kudzu, but they will eat all of the fine-textured kudzu-23 hay. The stems of kudzu-23 are seldom as thick as a lead pencil and, in general, are only about half to one-third as large as those of other kudzu. Like other kudzu, it is very drought-resistant and will provide grazing during the late summer when other pastures are brown. The dark green color and extra thickness of kudzu-23's leaves make for extra drought resistance.

Leaves of kudzu-23. This is the original plant found in Georgia in 1941.

Kudzu-23 has distinct qualities which give it soil conservation value. It covers the ground rapidly. It establishes itself as it spreads. It makes an unusually dense ground cover. Observations for a number of years show that kudzu-23 has about twice as many runners as common kudzu. It, therefore, has more joints and the joints root more readily. Complete ground coverage has been secured in 2 years' time. Kudzu usually requires 3 years. Each of the many rooted joints forms a new growth center. That is why kudzu-23 covers the ground so rapidly. Its many rooted joints later develop into crowns more numerous than those of common kudzu. Better protection against erosion, also, is afforded from its more numerous leaves, which form an unusually dense cover and give a dense litter.

Because of its numerous crowns, kudzu-23 is superior to other kudzu as a source of planting material on the farm. Hand-digging of kudzu-23 on plots has shown it to yield considerably more crowns than common kudzu—as much as 87,000 crowns per

Note.—The authors are management agronomist and nursery manager, respectively, Soil Conservation Service, Thorsby, Ala.

acre, compared with 50,000 per acre for common kudzu. On 4 acres, mechanically dug in 1950, kudzu-23 yielded 50,000 crowns per acre. Yields of common kudzu dug with plows usually run about 35,000 crowns per acre. The propagation of kudzu-23 from crowns should, therefore, be relatively cheap. This difference in yield of crowns is important because kudzu-23 will not remain uniform if propagated from seed. It will lose its identity unless propagated from crowns.

Yields of forage are about the same as for common kudzu. Utilization by livestock is better and, if handled as hay, operations are somewhat easier.

The growing of kudzu-23 is the same as that of common kudzu. Good cultivation must be given the first 2 years and the stand must be fertilized.

Limited numbers of crowns are available each spring by request through normal SCS channels. Plants are shipped from Thorsby, Ala. Those crowns now in the hands of the field service should soon form the bulk of the material for further increase and distribution.

Stems of common kudzu.

Stems of kudzu-23.

STRIKING INCREASE IN 1 YEAR.—"Using the string-row method to lay off my tobacco rows was worth $500 per acre to me last year," Bob Hobson, of Boonville, N. C., told Ned Hood, work unit conservationist in the Tri-Creek Soil Conservation District, at Yadkinville, N. C. The string-row method is a system of row lay-out for tobacco land which provides row drainage throughout the length of each row without ponding.

Hobson explained that as a part of his district program, guide rows were laid out on his tobacco land in 1950 because the previous rows did not have constant grade and his tobacco was being damaged by excess water during wet periods. "In 1949," he said, "tobacco on this land brought $300 per acre. In 1950, tobacco produced on the same land with a similar season brought $800 per acre."

MUCH IN A NAME.—James Ross, a cooperator of the Bracken County (Ky.) Soil Conservation District, is so proud of his terraces that he has named his farm "Terraced Hills Farm." The name is lettered on his mail box. District Conservationist D. W. Orcutt also reports that Ross is a magistrate, a neighbor-group leader, and a man of action in getting the conservation job done in his community.

TREES LIFT THE FORTUNES OF A PARISH FARM

By JIMMIE P. MAXWELL

FOLKS around Arcadia, La., used to call it the P-farm. They were referring to the 480-acre farm owned by Bienville Parish.

Now they call it the tree farm.

But let's look back almost 10 years.

The acreage, about 4 miles south of Arcadia, then was operated as a general penal farm. Early in 1941, for example, when the parish police jury became a cooperator with the Saline Soil Conservation District, the parish-owned tract was carrying 35 head of cattle, 8 mules, 30 hogs, and 50 chickens.

Seventy-eight acres were planted to cotton, ninety-one acres to corn, and thirty acres to potatoes, sugarcane, soybeans, and peas. One hundred and fifty acres were in pasture and one hundred and thirty-one acres in woodland.

Though the police jury employed a paid manager and had the advantage of a free labor force from the parish jail, the farm was a headache. It lost about $2,000 in 1942—the last year it was operated as a cultivated farm. The police jury retained ownership but temporarily abandoned any effort to work it. Meanwhile, there was considerable natural reseeding to pine trees. Because of their remoteness from trees, however, the steep, eroded slopes—where protective cover was needed most—had not reseeded.

More trees, the Soil Conservation Service suggested, would ease erosion and improve the chances of putting the land on a paying basis. Police jury members liked the idea. So 50,000 slash and loblolly pine seedlings were set out during the 1948-49 planting season.

SCS helped, too, by marking for selective cutting 100 acres of older woodland on the farm. Proper cutting, it was noted, would not only yield cold cash but, more important, would assure the remaining trees proper growing space and actually mean an improved timber stand which would command higher prices.

The trees in the selectively marked area sold on bid last fall for $2,750. The take included over 44,000 board feet of gum and over 39,000 board feet of pine. The rest of the cut was oak and other hardwoods. Follow-up cuts will be made on this tract at 5-year intervals.

Heartened by the sizable return and the improving condition of the land, the 10-member police jury voted last year to turn the entire acreage into a tree farm. They even had a big highway sign painted to mark it as such, and held a formal dedication ceremony the past February.

Note.—The author is work unit conservationist, Soil Conservation Service, Gibsland, La.

Crews like this one recently have planted more than 125,000 pine seedlings on the tree farm.

An additional 75,000 pine seedlings, obtained through the Saline Soil Conservation District, were planted during the 1950-51 planting season. The little trees will be ready for pulpwood thinnings in 12 to 15 years.

Police jury members are working toward a minimum yield of 500 board feet per acre per year when the entire woodland reaches a high productive level some 25 or 30 years from now. Properly managed, it then should yield $5,000 a year to Bienville Parish.

President Winlock Van Cleave, Gibsland, points out a more immediate return: "The more trees we grow, the better our soil becomes." He's hopeful that the tree farm will inspire others in the area to more scientific use of woodlands.

Other police jury members are Raymond Madden and Leslie Brewton, Arcadia; Steve Collinsworth, Bryceland; Buck Poole and Dallas Smitherman, Bienville; R. D. Conly, Ringgold; Dave Spinks, Jamestown; Carl Knotts, Castor; and Tom C. Rogers, Saline.

SHORT CUT TO LAND MEASUREMENT

By BERNHARD A. ROTH

TO PLAN food and fiber production, American agriculture must take inventory. Its basic stock-in-trade is represented by 1¼ billion acres of farm land.

Complicating the inventory is the fact that not all land is alike. Hundreds of soil types, varying degrees of slope and erosion, plus climatic and human factors, are involved.

An area mapped by Soil Conservation Service surveyors may show as many as 200,000 separate land parcels. The surface of each has to be measured to obtain a complete and accurate accounting.

Orthodox methods of measurement often are exceedingly slow. The two most common techniques involve use of the grid and the planimeter. In one case, the transparent grid is laid over a map of the problem area. By counting squares and interpolation, areas of the parcels can be computed. In the other case, the planimeter's stylus is run completely around the perimeter of each mapped plot and the area read from an indicator. Both methods require separate calculation and tabulation for every one of the multitudinous land parcels.

An improved technique has been devised by the Soil Conservation Service to eliminate the numerous, individual steps. The basic idea is that *map* weight of a piece of land of *known* area will help determine the unknown areas on maps of similar scale and paper composition.

Stated simply, an acre of land on one map should "weigh" the same as an acre on another map. Simple division of the unknown parcel's weight by the known weight-per-acre reveals the problem acreage.

Here is how the idea actually works: Soil conservation surveys are plotted on photo-maps of standard scale. Using sharp instruments, cartographic aids cut out all the many land parcels, jigsaw puzzle fashion. All parcels representing similar kinds of land are segregated in envelopes.

Contents of each envelope are weighed on fine analytical balances. From the known weight per unit factor, the total area of similar parcels is determined by one simple calculation. One recording

Areas from soil-survey charts are superimposed on photomaps and cut into thousands of irregularly shaped portions as a step toward estimating acreages.

Note.—The author is information and editorial specialist, Soil Conservation Service, Upper Darby, Pa.

From established weight factors, the total area of all similar land parcels can be quickly estimated—a method developed by the Soil Conservation Service which has saved thousands of dollars.

often replaces dozens or more. The result is time saved, and reduced possibilities for error.

The technique—known as "weight apportioning"—requires control. Adjustments are made for variations in paper manufacture and weight. Other compensations neutralize minor aberrations of scale in aerial photo-maps, and differences in topography. Nevertheless, spot checks by grids and planimeters prove the newer method keeps within a 1-percent margin of accuracy.

Thousands of dollars have been saved by this ingenuity in area determination, and American agriculture now gets a faster stock taking of its chief resource.

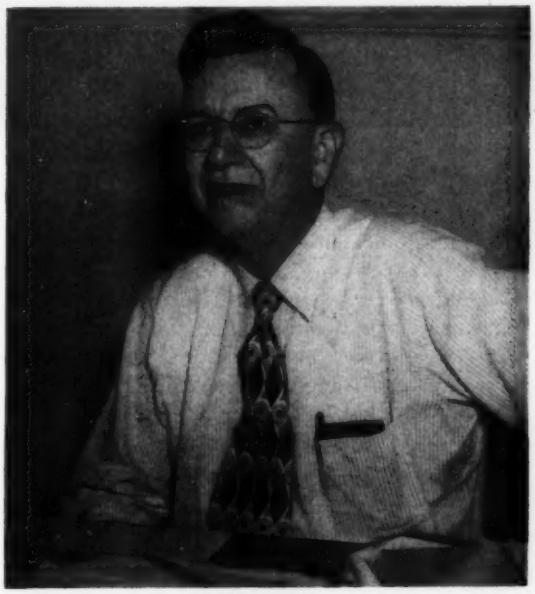
CONSERVATION ON HIS MIND

By ROY L. HAUGER

J. E. JUNKER of Rosenberg, Tex., is a conservation-minded farmer, landlord, and banker. He has three tenants on his two farms and they, too, think in conservation terms. Junker and tenants together farm 379 acres. Every year under conservation they increase crop yields. Every year the soil and grass improve.

"When soil and grass improve, crop yields and pounds of beef per acre increase. We made 50 bales of cotton on 62 acres last year, whereas we made only 42 bales on 148 acres in 1945 when we didn't know much about the work of soil conservation districts and were just getting started on our conservation plan," Junker noted.

George Hausler, Oscar B. Roesner, Jr., and Edwin Heckmann are tenants who take pride in the land they till. At first, however, they were doubtful about the value of the conservation plan, so Junker bought each enough superphosphate and Dixie wonder peas to cover 10 acres. The tenants applied the fertilizer, grew the peas, and turned them under to improve the structure and composition of the soil. In 1947 they increased their cotton yield to 66 bales on 128 acres.



J. E. Junker.

Late in 1947 some of the planned drainage work was completed and 20 more acres were planted to winter peas after superphosphate was applied. In 1948 the cotton yield increased to 74 bales on 128 acres. That fall 40 acres were treated with superphosphate and planted to winter peas. In 1949 the tenants harvested 88 bales of cotton on 128 acres.

Note.—The author is district conservationist, Soil Conservation Service, Rosenberg, Tex.

Hauger and Junker do a little checking up on corn and dwarf milo maize.

Junker completed the drainage system in 1949, and 40 more acres were planted to winter peas after the application of superphosphate. The 50 bales of cotton from 62 acres planted in 1950 represented an increase of 186 percent in per-acre yield in 5 years of conservation farming.

Junker also likes to compare the differences in maize yields. Where no conservation work was done, the land produced 1,450 pounds per acre; but where the maize followed winter peas that had been fertilized with superphosphate, the yield was 2,600 pounds per acre.

Before conservation work was started, corn averaged 25 bushels an acre; last year the yield was 40—a 60-percent gain.

Junker is a typical conservation banker. He understands the many problems of the farmers and ranchers of the Coastal Plains Soil Conservation District. In 27 years of banking in Rosenberg, he says, he has had to foreclose only three loans, none of them farm loans. Farmers and ranchers have complete confidence in Junker as president of the First National Bank and as an adviser on agriculture.

Junker is one of those outstanding public servants found in every soil conservation district. He has served on all kinds of farm and civic organization projects and committees as a leader or a working committeeman.

Junker has headed the Coastal Plains Soil Conservation District as chairman of the board of supervisors since 1943. He helped organize the district, then directed its development during the war years. After World War II he sparked creation of the Fort Bend County Drainage District, which was organized to finance and construct drainage outlets needed in the soil conservation district. Such outlets enable individual farmers to complete the drainage of their land.

"When we get our district drainage work completed," Junker says, "and our farmers and ranchers carry out their conservation plans, we'll increase agricultural income in the district $4,000,000 a year."

CHANGING THE APPROACH

By KENNETH WELTON

EARLY in our neighbor-group work we ran into difficulties in switching from the *individual* approach in farm conservation planning to the new *neighbor-group* approach.

A number of districts had 100 or more active applications for farm planning on file, and the district board could not agree to obligating the services of the SCS planner to any new applicants until those on the lists were serviced.

Note.—The author is State conservationist, Soil Conservation Service, Lafayette, Ind.

Some of those working on the techniques of neighbor-group work proposed that the applicants be separated into neighborhoods so that they might be serviced as neighbor groups instead of individuals. However, the early attempts at doing this showed that only a small percentage of the applicants fitted into neighborhoods. On the supposition that each of 100 farmer applicants belonged to some neighborhood and all of the neighborhoods were traced out, 80 or more neighborhoods would be revealed with an average of 7 farmers in each. Hence, there were 560 potential applicants for farm planning instead of 100.

With this in mind, we suggested a system to one of the districts with which we were working which has been tested by several Indiana districts with more or less satisfactory results.

The location of each applicant is marked on a district map. Usually it is found that there are concentrations of applications and it is usually a simple matter to draw a circle around artificial groups of up to 25 applicants. One or two groups may have to be composed of a more scattered pattern of applicants but usually the districts have been handled in from four to six artificial groups.

A letter from the board of supervisors is then sent to each farmer in the first artificial group selected for planning. The letter explains that, due to the increasing popularity of the district program and the shortage of trained planning assistance from the Soil Conservation Service, many farmers are having to wait a year or more for assistance, and that it is the policy of the district to give assistance through a conservation farm plan, including a conservation survey. It also states that the board is convinced that a great deal of time could be saved if farmers would attend a series of meetings with SCS technicians to discuss soil conservation problems and solutions, and that after such meetings appointments would be made for individual on-the-farm assistance. The letter invites the farmer to meet at a certain time and place with a group. The applicant is urged to attend, since this may be the only opportunity he will have for some time to receive the assistance he requested.

Our experience has shown that about 60 percent of the applicants thus circularized attend the meetings. Thus, 40 percent of the applicants are eliminated because they are not sufficiently interested. The supervisors feel that they have no further immediate obligation to this group that thus has eliminated itself. Of those who attend, usually 55 percent to 65 percent, or more, complete a plan in the scheduled time. Those that do not are considered, for the time being, to have been serviced.

In one district there were about 120 applications for district assistance on hand. In 1 year, through this system, the slate was cleaned and the district had between 50 and 60 additional good farm conservation plans. In this case, however, the problem was not completely eliminated because the district continued to accept new applications from individuals, so that by the time the 120 applicants were cleaned up there was a new list of over 50. Districts that have since used this scheme, however, have accepted applications only on a neighbor-group basis except in unusual cases. Farmers coming in during the period the plan is in operation are questioned concerning their neighborhoods and given no promises. When the planner finally turns to the neighbor-group method, he has a good start toward locating and lining up neighborhoods.

The Honorable Knox T. Hutchinson, Assistant Secretary of Agriculture, presents award to Hugh H. Bennett, Chief of the Soil Conservation Service. Looking on is Gordon K. Zimmerman, who was responsible for the concept of "Water for a Nation" and for the writing of the script.

Of 76 American films submitted at the International Film Festival at Edinburgh, only 11 were among the selections for public exhibition throughout the world. One of these was "Water for a Nation."

"Water for a Nation" is a 2-reel production by the Soil Conservation Service in both 16 mm. and 35 mm. It is a black-and-white sound film, released in 1949, which takes 20 minutes. It carries excellent photography, effective narration, and an original music score. The film shows that conservation farming helps to keep the water in the soil where it falls as rain or snow, thus preventing runoff and flood; and in arid country is a means of utilizing every drop of available water.

LONG GREEN CARPET THROUGH THE WOODS

By O. O. MOORE

A 23-mile-long, 100-foot-wide swath of grass in the pine-clad hills of Louisiana stands today as a tribute to cooperative enterprise and proper use and treatment of the Nation's land resources.

Its beginnings date from World War II when the Louisiana Power & Light Co., faced with the necessity of serving Army camps and expanding industry, constructed a high-voltage transmission line across parts of Sabine, Natchitoches, and Winn Parishes.

The 100-foot right-of-way was cut from heavily wooded hills and tangled creek bottoms. Trees and brush were cleared out as quickly as possible. After the line's completion in 1942, the company faced the task of keeping it clear of sprouts and bushes.

In mid-1949 the company bulldozed the entire right-of-way to end the bothersome growths. This permitted mowing by tractor-powered machines, and lowered maintenance cost.

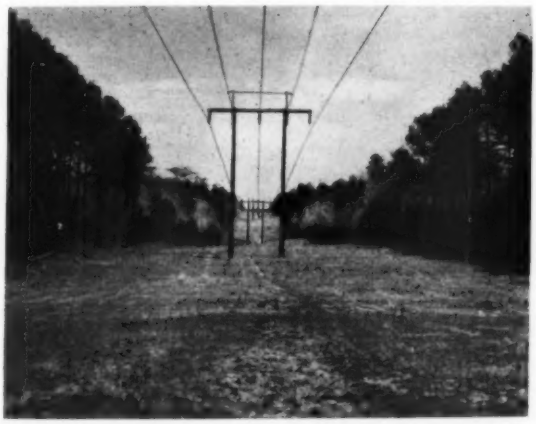
But a new trouble—the effect of hard rains on unprotected soil—came the following winter and spring. Large quantities of topsoil had been pushed aside during the bulldozing and blasting operations. Large areas lay bare, no longer protected by forest litter.

The result was inevitable. As rain after rain fell on the rugged hills and long rolling slopes, more soil washed away. Gullies formed, deepened, and lengthened and promised eventually to undermine the poles supporting the high-voltage lines.

After inspecting the problem area, company officials took the matter to Soil Conservation Service technicians at Winnfield, La., then to the Dugdemona Soil Conservation District.

A survey of conditions revealed the factors influencing erosion and the kind and amount of treatment needed to control it. The study showed that more than 16½ miles of the 23-mile-long strip were being moderately or severely eroded. Plans were made to treat each section of the right-of-way according to its hazards and its needs.

Note.—The author is district conservationist, Soil Conservation Service, Winnfield, La.



Vegetation takes hold on the right-of-way after fertilizing and seeding.

The big job, done by private contractor, began last September. The more critical areas were treated first. SCS technicians supervised the work and ran diversion terrace lines on areas where it was considered essential to establish a good grass cover.

The tractor and terracing plow, owned and operated by the district, built the terraces. Smoothing and filling of large gullies, seeding of ryegrass and Singletary peas, and fertilizing to maintain a vigorous protective cover were important parts of the job.

The coordinated conservation program has blunted the erosion dangers. And it has done so despite heavy grazing by range cattle and hogs which have concentrated on the lush green forage.

The project is one more bit of evidence that people are beginning to recognize that "with the right to use goes the duty to conserve" and that industry and soil conservation districts benefit from working together.

SPREADING A BLANKET. — Farmers in the Cheatham County (Tenn.) Soil Conservation District lacked only 3 acres of getting all cover cropping planned through 1950 applied on the land, the annual report of the board of supervisors shows. Of the 3,648 acres planned for this practice, 3,645 acres had been applied at the end of the year.

REVIEWS

WATER—OR YOUR LIFE. By Arthur H. Carhart. 312 pp. 1951. Philadelphia, Pa.: J. B. Lippincott Co. $3.50.

"Water—Or Your Life" does an effective job of putting the Nation's water problems in focus. It combines the best techniques of pulp fiction with an amazingly extensive web of facts. Of many recent books on "popular" conservation, it may prove one of the most successful.

Carhart's searching observations may awaken spectres of water conservation in many American homes. His correlation (of water—or your life) extends to the loaf of bread on the table and gasoline in the family car. So soundly does he develop his thesis that professional conservationist and layman alike may conclude—"It's much later than we think."

Arthur H. Carhart, the book's author, is a prominent figure in the conservation and out-of-doors field. In World War I, he was an Army medical-corps officer in charge of water sanitation. He was subsequently a member of the Forest Service and, later, a director of wildlife restoration funds for the Colorado Fish and Game Commission. He lectures widely and has often been conservation's protagonist in public debates involving the country's natural resources.

As seen in "Water—Or Your Life," Carhart is at his best jabbing at apathetic attitudes. Water sore spots and enigmas in Texas City, Los Angeles, Atlantic City, and New York do not seem remote when he drives home their potential far-reaching effects on pocketbooks, health, and ways of life elsewhere in the land. Even when the book toys with highly explosive irrigation matters of the far West, the most hide-bound Main Streeter feels uneasily concerned.

From his numerous, unfavorable appraisals of them, it is obvious that the author is no exponent of "big projects" in formal conservation programs. His criticism of what he calls "super-engineering" works and proposals is, however, tempered with contrasting examples of their occasional necessity and value. The Yuma, Huntley, and Minidoka projects are treated in the latter vein.

In the main, "Water—Or Your Life" is sympathetic with the "upstream engineering" philosophy of the Soil Conservation Service. With some reservations, it approves of practices which "may directly contribute to more sustained flow of water in streams feeding from ground reservoirs. And by helping to prevent floods, they may reduce the usefulness of flood control dams."

With a familiarity he has demonstrated in a number of magazine articles, Carhart devotes several chapters to problem areas of the West. There, he is able to describe in stormy detail the No Man's Land that still exists between conservationists and opposing factions. At this point alone, "Water—Or Your Life" will undoubtedly be damned or deified.

But whatever the point of view, most readers will agree that the new book performs several valuable services. It is a respectable critique of water conservation programs now existing; it offers standards for measuring others still in the proposal stage; and, with its careful index, it furnishes a ready reference to both ancient and modern history of water conservation in the United States.

—BERNHARD A. ROTH.

GOOD SCOUTS PLANT TREES.—Charles N. Hammarlund, Jr., an SCS aid since 1945, and scoutmaster of Troop 2 at Branford, New Haven County, Conn., for 3 years, has received the Hornaday National Court of Honor Award and a Gold Medal Badge for "distinguished service to conservation." He is the first in Quinnipiac Council, and the third in Connecticut, to receive this award.

Among the conservation jobs that the 45 boys did was to plant 20,000 trees on farms in the New Haven County Soil Conservation District.

Hammarlund and some of his Branford, Conn., Scouts.

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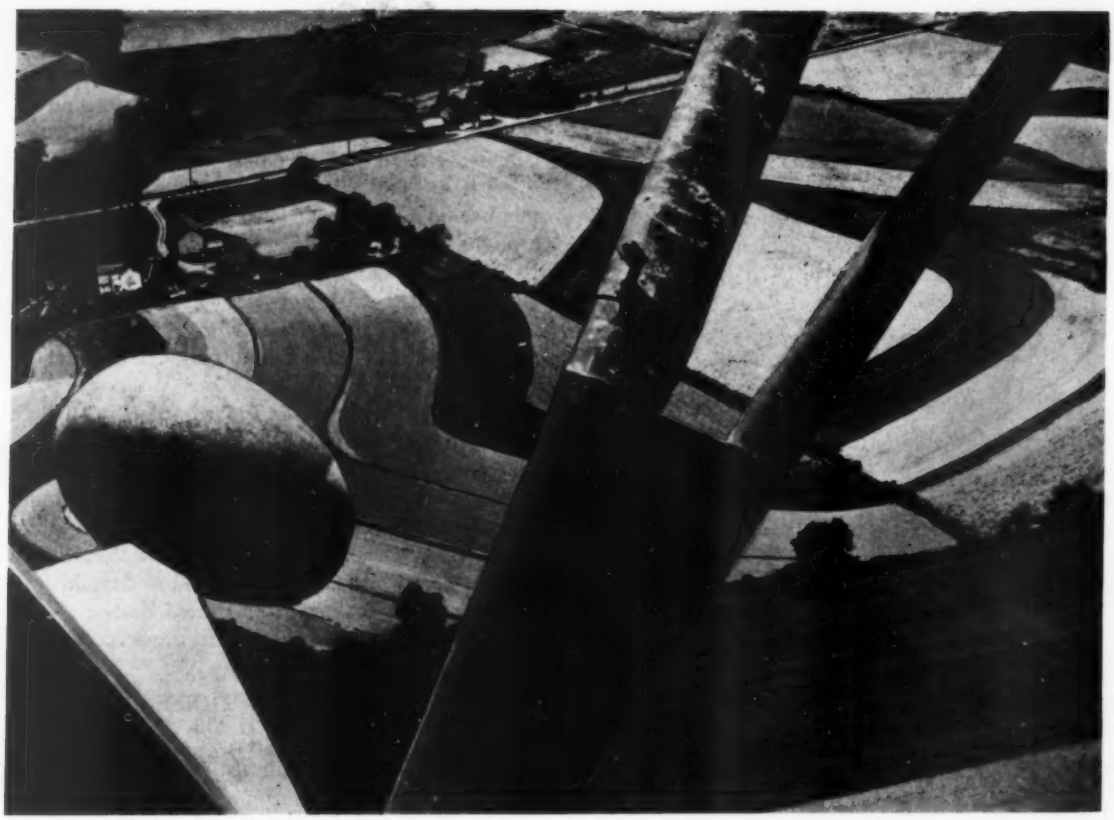

PRETTY COUNTRY!—Not everyone flies his own plane, notwithstanding the impressive number of flying-farmer clubs. It is getting to be more and more fun looking down on the countryside, for contour farming has beauty as well as utility. And this beauty is of constant variety, a subject of immense popularity with the photographers. Rarely, however, does a picture-man show us what it's like to look down on this increasingly handsome farm land through the props and past the wheels of the plane in which he rides. Gordon S. Smith, however, does exactly that, in giving us this view of the farms of Christian Schmidt, Walter Seem, and Oscar Rosenberger, near Spinnerstown, Pa.

PUTTING LAND TO WORK.—On land that had previously grown only broomsedge and poverty-grass, Cyrus Cozart, in the Upper Ohio (W. Va.) Soil Conservation District, raised 112 bushels of shelled corn per acre in 1950. This is at least twice as much as the average per-acre yield in the county. The big change is the result of application of conservation practices, including contour planting and use of manure, lime, and fertilizers.

PROFITS GROW IN PASTURE. In 1945 when Art Twitchell started farming the conservation way at Mt. Upton, N. Y., under a complete farm plan made with the Chenango County Soil Conservation District, he had 90 acres of pasture land in two farms. He pastured young and dry stock on 57 acres, and milk cows on 33 acres at the home farm. Today, under his conservation plan, he pastures all 35 head on the 33 acres. It's ample because he has it in Ladino, orchardgrass, and birdsfoot trefoil. He limed and fertilized the native bluegrass and white clover. There is no running back and forth between pastures, because he is reforesting the 57 acres. Income from it will put his son through college.

Milk, dry, and young stock work around the rotated pasture, keep the rank growth down, and reduce the amount of mowing. The real payoff, however, is in the milk check. In 1950 the cows averaged 1,600 more pounds of milk per cow than they did in 1949. The gain was made during the pasture season. "More milk, no green feed to cut and haul, grain consumption down, larger milk checks—quite a jackpot!" Twitchell chortles.

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